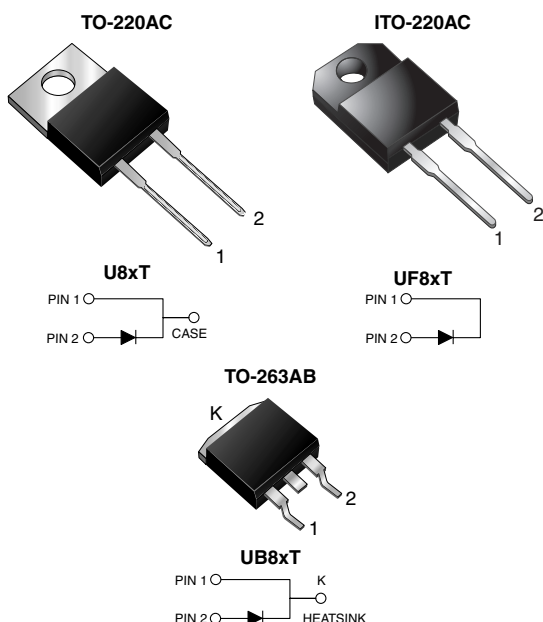


## Ultrafast Rectifier



### FEATURES

- Oxide planar chip junction
- Ultrafast recovery time
- Low switching losses, high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AC and ITO-220AC package)
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC



**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer computer, automotive and telecommunication applications.

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	8.0 A
$V_{RRM}$	100 V to 200 V
$I_{FSM}$	100 A
$t_{rr}$	20 ns
$V_F$ at $I_F = 8$ A	0.79 V
$T_J$ max.	150 °C

### MECHANICAL DATA

**Case:** TO-220AC, ITO-220AC, TO-263AB

Epoxy meets UL 94 V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum

### MAXIMUM RATINGS ( $T_C = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	U8BT	U8CT	U8DT	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	100	150	200	V
Maximum average forward rectified current (Fig. 1)	$V_{F(AV)}$	8.0			V
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	100			A
Isolation voltage (ITO-220AC only) from terminals to heatsink $t = 1$ min	$V_{AC}$	1500			V
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150			°C

## U(F,B)8BT thru U(F,B)8DT

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ELECTRICAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage <sup>(1)</sup>	I <sub>F</sub> = 5 A I <sub>F</sub> = 8 A I <sub>F</sub> = 20 A	T <sub>A</sub> = 25 °C	V <sub>F</sub>	0.90 0.96 1.12	- 1.02 -	V
	I <sub>F</sub> = 5 A I <sub>F</sub> = 8 A I <sub>F</sub> = 20 A	T <sub>A</sub> = 150 °C		0.72 0.79 0.99	- 0.86 -	
Reverse current <sup>(2)</sup>	Rated V <sub>R</sub>	T <sub>A</sub> = 25 °C T <sub>A</sub> = 100 °C	I <sub>R</sub>	- 200	10 500	μA
Reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	15	20	ns
Reverse recovery time	I <sub>F</sub> = 1.0 A, dI/dt = 100 A/μs, V <sub>R</sub> = 30 V, I <sub>rr</sub> = 0.1 I <sub>RM</sub>		t <sub>rr</sub>	19	-	ns
Storage charge			Q <sub>rr</sub>	7.1	-	nC
Reverse recovery time	I <sub>F</sub> = 8 A, dI/dt = 50 A/μs, V <sub>R</sub> = 30 V, I <sub>rr</sub> = 0.1 I <sub>RM</sub>		t <sub>rr</sub>	23	-	ns
Storage charge			Q <sub>rr</sub>	6.5	-	nC
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	25	-	pF

**Notes:**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: Pulse width  $\leq 40\text{ ms}$ 

THERMAL CHARACTERISTICS ( $T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	U8XT	UF8XT	UB8XT	UNIT
Typical thermal resistance from junction to case	$R_{\theta JC}$	4.0	5.0	4.0	$^{\circ}\text{C}/\text{W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	U8DT-E3/4W	1.83	4W	50/tube	Tube
ITO-220AC	UF8DT-E3/4W	1.69	4W	50/tube	Tube
TO-263AB	UB8DT-E3/4W	1.37	4W	50/tube	Tube
TO-263AB	UB8DT-E3/8W	1.37	8W	800/reel	Tape and reel

## RATINGS AND CHARACTERISTICS CURVES

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

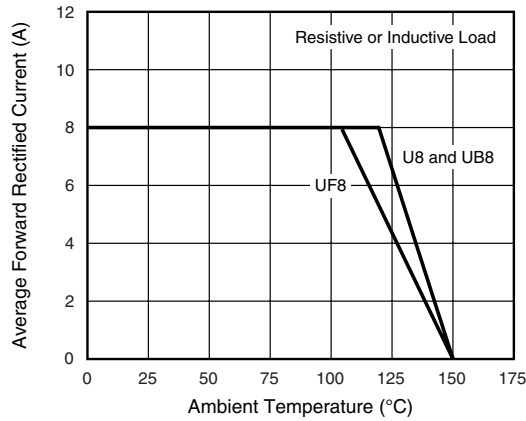


Figure 1. Maximum Forward Current Derating Curve

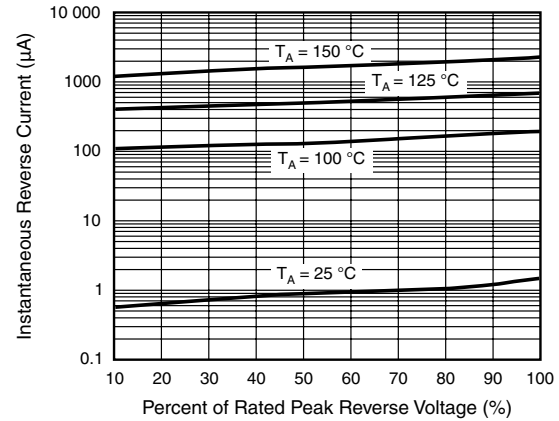


Figure 4. Typical Reverse Leakage Characteristics

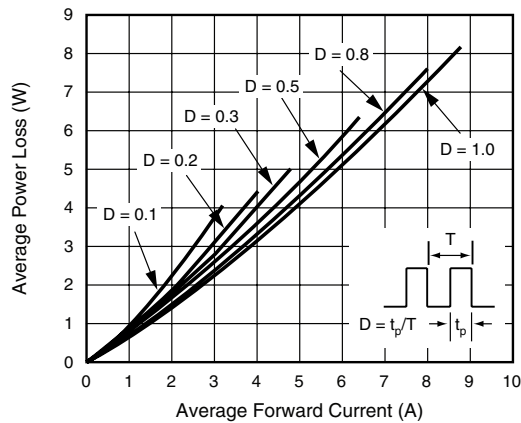


Figure 2. Forward Power Loss Characteristics

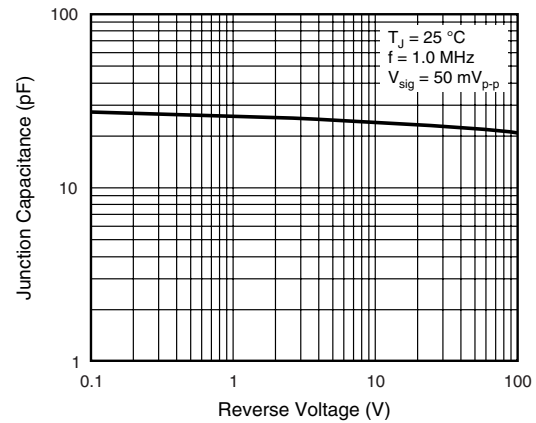


Figure 5. Typical Junction Capacitance

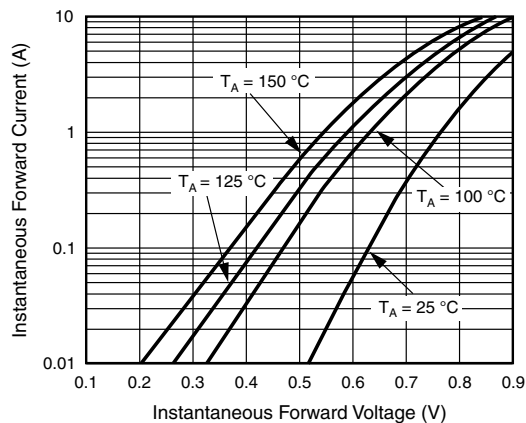
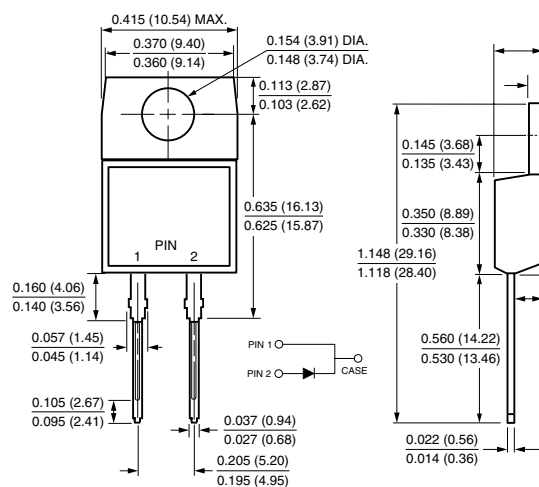
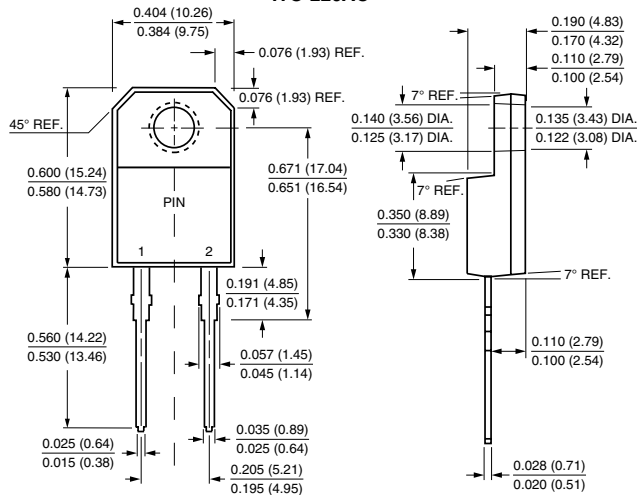
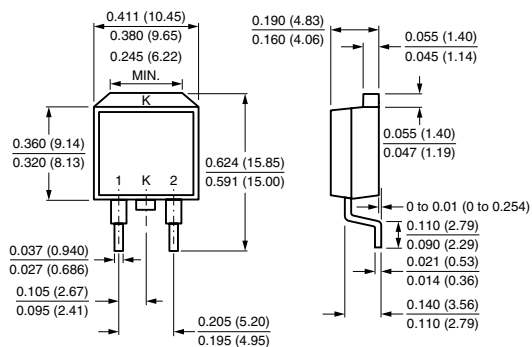
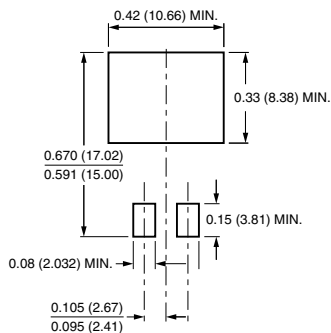


Figure 3. Typical Instantaneous Forward Characteristics

## U(F,B)8BT thru U(F,B)8DT

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**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)**TO-220AC****ITO-220AC****TO-263AB****Mounting Pad Layout**



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